
Environment

EARTH

WATER

SKY



This chapter reviews issues related to El Paso's natural resources. This chapter is divided into two major sections: Environmental Resources and Environmental Impacts. The first section addresses issues of natural resources including questions of sustainability for water resources, air quality, energy resources, ecologically sensitive areas, and the natural environment. The latter deals with environmental conditions—natural and man-made—that can impact the City.

ENVIRONMENTAL RESOURCES

Careful land development practices that protect the environment today will be beneficial in the future. This plan recognizes that natural resources are not inexhaustible commodities, but rather valuable assets to be judiciously used and wisely managed. Importantly, El Paso's environmental issues have regional implications as well. Pollutants El Pasoans discharge into the air or river system affect the air and water quality in neighboring Ciudad Juarez, Mexico and Dona Ana County, New Mexico. Conversely, El Paso is impacted by the environmental practices of our neighbors. El Paso's environmental goals cannot be met without considering impacts from the entire region.

Water Resources

The City of El Paso through the El Paso Water Utilities Public Service Board (EPWU-PSB) is committed to developing a sustainable supply of water as evidenced by the Strategic Plan. This commitment is exemplified in the aggressive implementation of new and expanded surface water treatment plant capacity at the Jonathan Rogers and Canal Treatment Plants, the conversion of wastewater at the Fred Hervey wastewater Treatment plant to recharge ground water, and the achievement of decade long goals in water savings through conservation. Impressive gains have been made in water reclamation by converting water usage for industries such as electrical generation and golf course, that have traditionally relied on potable waters, to reclaimed water.

Primary Goal

Water resources should be managed so utilization is kept to a rate where the supply is adequate, sustainable, safe and available to all citizens, business, industry, agriculture, and wildlife habitat in the El Paso region.

The El Paso Water Utilities has also made a concerted effort to reduce water use through conservation and achieved a reduction of per capita use from over 200 gallons per person to 164 as of 1999. While all these efforts have created a positive momentum toward sustainable water use, the utility will still face formidable challenges to supply water as the City and region continue to grow. To ensure community viability, future development will have to mimic the pace of water rights transfers while balancing the overall social and economic criteria that is often at odds with water resource allocation and use.

Sustainability

The City's water supply is a balance between the primary sources of the Hueco and Mesilla Bolson groundwater aquifers and surface water diverted from the Rio Grande, and the as yet to be developed secondary sources of groundwater in West Texas, and desalination.

GOAL: CONTINUE DEVELOPING OPTIONS TO PROVIDE A SUSTAINABLE WATER SUPPLY FOR THE CITY OF EL PASO.

Historical dependence on available and relatively inexpensive groundwater will reduce as the groundwater becomes depleted and degraded. Surface water will increasingly replace groundwater as treatment systems are further developed. Groundwater will become a supplemental and drought contingency source, or as in the situation of the two water ranchs owned in West Texas, a tentative contingency source. Desalination will be developed in the next several decades and provide a necessary secondary source within the overall system. Conservation, including reclamation will be utilized to maximize the source supply as much as possible. Each of these sources will be balanced to provide a dependable and sustainable supply of water.

POLICY: Continue development of policies that promote and bolster the development of surface water treatment, conversion of water rights to municipal and industrial (M & I) use, and conveyance systems as envisioned in the El Paso Water Resource Management Plan and subsequent development plans and programs developed through the El Paso-Las Cruces Regional Sustainable Water Project of the New Mexico-Texas Water Commission.



Above: Fred Hervey Water Treatment Plant.

A broad regional group of diverse water stakeholders are successfully developing methods to utilize surface water resources as the primary water source for cities within the region. This effort is being implemented by the New Mexico-Texas Water Commission through the El Paso-Las Cruces Regional Sustainable Water Project. Treatment plants, conveyance systems and environmental enhancement are all aspects of the project. Construction on various components of the project are planned to begin in early 2002. When fully developed this project will relieve pressure on the Hueco and Mesilla Bolson aquifers. This will reduce dependence on this finite water resource, commonly shared by Chihuahua, Mexico, New Mexico, and Texas.

POLICY: Expand water delivery systems only when this does not threaten the long term feasibility of achieving sustainable water resource goals.

Growth is dependent on the availability of resources. Water resource development must be coordinated in conjunction with the land development process.

ACTION: Continue development of policies and ordinances that support wise water usage and integrate sustainability into the land development approval processes.

Continue to develop land use processes that support the Primary GOAL of a sustainable water supply by integrating wise water use standards. Ensure that these processes create greater flexibility for the developer to promote innovative design and streamline the review for projects to incorporate unconventional water efficient approaches. Review should be based on agreed performance standards that are included as integral steps in the development process.

ACTION: Coordinate the land use review process to include requirements for developers to provide a development phasing program. Similarly, industrial expansion and annexation plans shall be coordinated to assure timing with water and wastewater improvement programs to fit development of collection, treatment and conveyance of water and wastewater systems.

ACTION: Complete design and construction of new, and expand capacity of existing water treatment plants and conveyance lines, to transform the water system for the City (refer to Sustainability Goal).

Conservation

GOAL: **IMPROVE AND EXPAND THE EXISTING CONSERVATION POLICY TO CREATE A MORE COMPREHENSIVE CONSERVATION PROGRAM.**

Additional conservation options need to be explored to ensure that all viable opportunities in conservation are utilized. These conservation options should explore every alternative for more efficient water usage in all economic sectors including residential, commercial, agricultural, institutional, industrial, open space and park uses. Once collected, the alternative should identify where additional

conservation savings can be achieved and include cost/benefit analysis relative to other conservation and water supply options. These alternatives should be implemented based on gain, feasibility, cost and timing. The final program should be inclusive of all options, including reclamation, and clearly state each option's preferability.



Above: Chihuahuan Desert Landscaping at the Insights Museum in Downtown El Paso.

POLICY: **Explore opportunities for implementation of a resource conservation landscape ordinance that fairly balances aesthetics with water conservation.**

Opportunities exist to conserve water and enhance the aesthetic quality of the City. Development of a landscape water conservation ordinance and adoption of a code that reflects these opportunities in a performance-based manner could lead to expanded landscaping options. The new code should promote xeriscape, open space, reclamation and other conservation options while exploring a mix of incentive based alternatives.

ACTION: **Utilizing identified water conservation options create a system for adopting various alternatives, and rank each for implementation when feasible, fair and appropriate.**

Once new water conservation opportunities are determined, implementation plans should be created and approved by the City Council and the Public Service Board. Comprehensive plan maintenance should include regular appraisal of alternatives so maximum program efficiency is achieved and the system is continuously improving.

GOAL: **INTEGRATE DROUGHT CONTINGENCY PLANNING INTO ALL ASPECTS OF CITY GOVERNMENT, BUSINESS AND RESIDENTIAL SECTORS.**

The El Paso Water Utilities has developed a drought contingency system. This was done both for practical reasons and for compliance with Texas State Law. El Paso Water Utilities will communicate the implications and requirements of the plan and changes, to all social and governmental segments of the City, so everyone understands what is required when drought conditions occur.

POLICY: Continually improve the drought contingency plan developed and adopted by PSB and City Council so that the City is always ready to manage water shortages.

POLICY: Continue to develop and implement communication integration so all City departments and citizens understand potential drought severity.

ACTION: Ensure that the Texas Senate Bill One regional planning process includes practical considerations for implementation that are feasible for the City as a whole.

Texas Senate Bill One requires that comprehensive regional water planning be accomplished throughout the State. Part of this planning process requires drought contingency planning. Any planning endorsed by the Regional Water Planning Group and contracted through the Rio Grande Council of Governments must be implementable by the City. PSB must coordinate with other City departments to ensure all planning is feasible, understood and implementable.

ACTION: Communicate, through public outreach and educational programs, drought contingency and drought implication, so the community is prepared to implement water saving measures as required during drought periods.

Technology

GOAL: CONTINUE TO DEVELOP COST EFFECTIVE PROCESSES TO REUSE AND RECLAIM WATER AND UTILIZE NEW TECHNOLOGIES, SUCH AS DESALINIZATION, TO EXPAND CAPACITY AND LESSEN THE IMPACTS OF SCARCITY SITUATIONS.

Future development of treatment plants for desalinization, purification, and reclamation will be used to expand water resources. Each is of a different cost and complexity so future dependence on technological options should be carefully weighed so the price of the water system is fairly allocated.

POLICY: Expand the use of reclaimed water, nonpotable water, where possible, and desalinization, to provide opportunities for continued economic growth of the City and region.

ACTION: Convert irrigation systems for parks, ball-fields and golf-courses to reclaimed water, where feasible.

ACTION: Encourage new industrial development to incorporate reclaimed water into facility design and convert as much existing industrial capacity to the use of reclaimed water as is practicably feasible.

ACTION: Explore the feasibility of utilizing innovative and nontraditional reuse, recycling, wastewater treatment and conservation options to increase the water supply.

GOAL: UTILIZE OFF-PEAK AND OTHER SURPLUS SUPPLIES OF SURFACE WATER TO RESTORE GROUNDWATER AQUIFERS THROUGH AQUIFER STORAGE AND RECOVERY (ASR) AND MANAGE THE RESOURCE BY EMPLOYING COMPUTER MODELING AND BEST GROUNDWATER MANAGEMENT PRACTICES.

POLICY: Design well systems to simultaneously protect groundwater and integrate changing City land use features.

Land set asides will be needed to restore, protect and utilize groundwater resources. Based on this requirement, specific site design standards need to be created. The water utility will work with the City and land developers to create design standards to mutually achieve land uses that integrate with ASR well-fields.

ACTION: Create design standards for integration of ASR well-fields so well and well-field sites are mutually agreeable to City Departments, EPWU-PSB, land owners and developers.

POLICY: Complete models, maps and databases defining the extent and dynamic of the Hueco and Mesilla aquifers and complete all aquifer and storage recovery projects relevant to aquifer health.

To define, protect, and allocate water resources the dynamic of the hydrologic cycle, and, in particular, the complexity of the groundwater system, needs to be understood. El Paso Water Utilities, in cooperation with various Federal and State agencies, universities and consultants, is constructing a set of models to predict and understand these systems. This is particularly crucial for implementation of an aquifer storage and recovery system.

ACTION: Complete the MODFLOW modeling of the Hueco Bolson, continue mutual development between Mexico and Texas on managing the resource.

MODFLOW is a software program developed by the U.S. Geological Survey designed to simulate groundwater flow and water levels in both unconfined and confined aquifers. It predicts changes in water levels in aquifers over time caused by well pumping and direction of water flow. In turn, it provides aquifer management guidelines for optimum design of well systems. This allows for evaluation of the relationship between rivers, streams, agricultural drains, and groundwater, including the relationship between different aquifers and estimation of the water budget (storage) in the aquifer.

ACTION: Continue research and implementation of management strategies for the Hueco Bolson and development of ASR to ensure sustainable use.

As part of a regulatory protection measure imposed by the State of Texas to protect and preserve groundwater basins from degradation and over-exploitation, the Hueco Bolson has been designated a Priority Groundwater Management Area (PGMA). Use of the Hueco Bolson will have to be managed to properly conserve the resource and conform to a regulatory system that will allow for bi-national and bi-state agreement on usage.



Above: Example of xeriscaping at Insights Museum.

ACTION: Utilize existing and future Geographic Information Technology to track threats to groundwater (water sources in general) and manage the interrelationships between land uses and water resources.

Regional Cooperation

GOAL: EXPAND COOPERATION ON DEVELOPMENT OF COMPREHENSIVE REGIONAL WATER RESOURCE MANAGEMENT SO ALL NATIONAL, INTERNATIONAL AND LOCAL PARTICIPANTS CAN MUTUALLY ACHIEVE SUSTAINABILITY OF WATER RESOURCES.

The New Mexico-Texas Water Commission is actively developing a cooperative treatment and conveyance system of sustainable surface water for municipal and industrial use. This amicable relationship is an example of the type of process that needs to be expanded to mutually solve water problems within the region. For perpetuity, water is going to be a crucial issue. It will literally determine the extent of development and health of the community. Handling the issue in a just, fair and safe manner, where disputes are resolved sooner rather than later, is the most cost effective and environmentally beneficial way to advance the health of the region. This process will require the involvement of the Federal governments of Mexico and the United States, the States of Texas, Chihuahua, and New Mexico, and all the cities within the region and the various other agencies, districts and affected private entities.

POLICY: Continue to seek expanded cooperation and explore options to include Mexican, Texan, and New Mexican entities while adjusting water management to accommodate the necessary changes in usage and flow.

ACTION: Utilizing plans developed through regional cooperation, establish a cooperative agreement to provide year-round surface water flows from the Rio Grande River to the City.

GOAL: CONTINUE TO TRANSFER WATER RIGHTS FROM THE AGRICULTURAL SECTOR IN EL PASO COUNTY TO MUNICIPAL AND INDUSTRIAL (M&I) USE THROUGH PURCHASE AT A FAIR MARKET VALUE, CONSERVATION METHODS SUCH AS LINING OF CANALS, AND ENCOURAGING EFFICIENT USE AND DELIVERY.

As the City moves from a dependence on ground water to surface water, allotments for surface use that have been historically held by agricultural irrigators will have to be transferred to the City. This transaction should occur at multiple levels and include purchase, conservation and lease of water rights.

POLICY: Utilize the best available data to ensure that the most productive agricultural lands are maintained.

ACTION: Publicize the various options available to land owners with water rights to lease, sell or transfer water rights to the City.

GOAL: DEVELOP FAIR STANDARDS THAT ACCOMMODATE GROWTH INCLUDING METHODS TO RECOUP ADDITIONAL EXTRA CAPITAL EXPENDITURES FOR EXPANDED CITY SERVICES.

POLICY: Create standards for analysis of new and additional infrastructure costs for land that is to be annexed into the City.

ACTION: Have a methodology that outlines compensation for new infrastructure and additional services added to the City Code within the next two years.

POLICY: Establish rate structures that balance the cost for service so the present customer base is not burdened by newly annexed lands incorporated to the City.

ACTION: Consistently evaluate standards so the cost of new development is not disproportionately shared by any one group or interest, such as neighborhoods, city services or developers.

Air Quality

Air quality has a direct and far reaching impact on public health and well-being. El Paso has serious air quality problems exacerbated by our climate, topography and border location. Our high desert climate, responsible for good air quality much of the time, is subject to atmospheric conditions which create warm air inversions that trap pollution in the fall and winter months. Our valley location creates a basin which further traps pollutants on low-wind days. On high wind days in the springtime, dust storms further pollute the air. Finally, pollution on the Mexican side of the border significantly impacts El Paso's environment and quality of life.

GOAL: **MEET THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR ALL AIR POLLUTANTS IN THE EL PASO AREA.**

The Federal Clean Air Act authorizes the U.S. Environmental Protection Agency (EPA) to establish national air quality standards. Responsibility for monitoring and enforcing these standards falls to the states. Thus, the Texas Clean Air Act authorizes the Texas Natural Resource Conservation Commission (TNRCC) to carry out these national clean air requirements. National Air Quality Standards were created by the EPA to establish hazardous levels of the six most prevalent man-made pollutants. Communities that do not meet these federally mandated air quality standards are subject to loss of federal highway funds. The EPA has designated El Paso a non-attainment area for three pollutants: ozone at the serious level, carbon monoxide and PM-10 (particulate matter) at moderate levels. These pollution excesses affect not only El Pasoans' health and quality of life, but have an economic impact on the City as well.



Above: Vehicle Pollution.

POLICY: **Support other governmental jurisdictions in attaining and maintaining air quality standards for the region.**

El Paso is located in a regional airshed which includes El Paso, Ciudad Juarez, Mexico, and southern Dona Ana County, New Mexico, creating an international and interstate air quality problem. El Pasoans are therefore subject to air pollutants from our neighbors caused by older vehicle emissions, open burning of refuse, garbage and tires, dust from miles of unpaved roads, and emissions from industrial plants. These additional sources of pollutants increase challenges to the efforts made by El Pasoans to improve air quality. The EPA has granted waivers to El Paso based on the fact that we are affected by emissions emanating from outside the country. However, this unique situation has been used to develop the only bi-national air monitoring program in the world.

ACTION: **Continue to work closely with regional air quality task forces on both sides of the border.**

Annex V of the La Paz agreement (an agreement between the United States and Mexico) designated El Paso, Sunland Park and Ciudad Juarez as a specific geographic area where both countries would perform detailed analyses on air quality. The Joint Advisory Committee (JAC) on air quality improvement was created out of this agreement. The JAC, a binational organization made up of 20 members from Texas, New Mexico and Mexico, was formed to work as a liaison among federal, state and local agencies as well as the community to devise strategies to improve air quality. This committee is advised and guided by the Paso del Norte Air Quality Task Force, a group composed of interested persons from all sectors of the community.

ACTION: Continue to restrict outdoor burning.

Smoke from wood, tire or trash burning is a significant source of particulate matter pollution. Outdoor burning is restricted in the City, but is allowed with certain restrictions outside City limits. Continuing to place tough restrictions on outdoor burning can help mitigate the problem.

POLICY: Promote new development which encourages the use of public transit and reduces dependence on the automobile.

Vehicle emissions account for 96% of the ambient CO in El Paso. Designing new developments to be pedestrian and transit oriented, rather than fostering dependence on the automobile, can help reduce CO emissions. The City should also explore the possibility of a citywide light rail system (see **Map Atlas**).

ACTION: Promote Citywide car and van pooling programs.

One way to reduce the amount of energy consumed by the use of automobiles and subsequently reduce emissions is to promote carpooling/vanpooling programs. The City operates a Rideshare Program through Sun Metro, a system which uses a computer program to match potential carpoolers by place of residence, place of employment, and hours and days worked. Another option, vanpool programs, utilize 9- to 15-passenger vans to transport commuters to work for a monthly fee that is significantly less than normal commuting costs.

ACTION: Pave streets, alleys and parking lots to reduce particulate matter pollution.

El Paso is the only area in Texas that does not meet the national standard for respirable particulate matter, commonly known as PM-10. These tiny particles, less than 10 microns in size, are produced by a wide variety of natural and man-made sources, such as smoke, motor vehicles, factories, and plowing dust. These particles are small enough to pass through the natural protection of the mouth, nose and throat, but are large enough to cause irritation to the lungs. PM-10 exceedences usually occur in the winter months and are associated with the “brown cloud” one sometimes sees hanging over the City. Sources of particulate air pollution such as dust may seem insignificant until multiplied by the total number of unpaved roads, alleys and parking lots. Paving these surfaces will help to alleviate El Paso’s PM-10 exceedences.

POLICY: Promote low-emission industrial and business development.

One way to reduce the amount of air pollution caused by industry is to encourage only those industries that are non-polluting to locate in El Paso. In the long run, environmental impacts from polluting industries can outweigh any benefits such industries may bring. Additionally, non-polluting high-tech industry generally offer a high wage structure that can benefit the local economy.

ACTION: Continue to regulate quarrying operations to mitigate particulate matter pollution caused by dust.

POLICY: Promote research and education that focuses on improving air quality.

The current air quality situation does not have to be permanent because air pollution is mitigated by natural environmental processes. Though there is greater awareness regarding air quality issues, research into air quality solutions and educational programs to enhance public awareness of the problem must continue. The City must continue its efforts to improve the region's air shed if it is to achieve its goal of meeting the National Ambient Air Quality Standards by the year 2025.

ACTION: Encourage the use and conversion to cleaner-burning fuels.

The Clean Air Act Amendments of 1990 require that states submit plans (State Implementation Plans, or SIPs) to the EPA which address methods to be implemented to attain National Air Quality Standards. A number of control programs have been created as a result of the SIP revisions including the enhanced inspection and maintenance program (Texas Motorist's Choice Program, implemented January 1, 1997), designed to reduce vehicle emissions of carbon monoxide and hydrocarbons, the gasoline vapor recovery system nozzles now found on all area gas pumps, and oxygenated fuel used during the winter months. El Paso also participates in the Texas Clean Fleet Program, which requires a percentage of low emission vehicles for fleets operating in non-attainment areas. So far, 47 Sun Metro vehicles have been converted to Compressed Natural Gas fuel. In addition to the above measures, the TNRCC maintains a smoking car hotline to help reduce pollution from existing vehicles. The owner of the high-emission vehicle is contacted and educated about how to fix the problem.

ACTION: Continue regulation of sprayed pesticides, herbicides, and fertilizers through agricultural and soil conservation services and the City-County Health and Environmental District.

Sustainable Development

El Paso's natural resources—water, soils, wildlife and plant life—are fragile and finite. Once depleted, they cannot be easily restored.

GOAL: ENSURE THAT THE CITIZENS OF EL PASO ARE PROVIDED A SAFE, HEALTHY AND POLLUTION-FREE ENVIRONMENT WITH SUFFICIENT NATURAL RESOURCES TO SUSTAIN AND IMPROVE THEIR QUALITY OF LIFE.

POLICY: Consider the energy efficiency of proposed new development when land use and development review decisions are made.

ACTION: Develop an incentive plan to encourage the building of energy efficient homes.

Incentives should be provided to builders who construct energy efficient homes, perhaps in terms of density bonuses, fee reductions or variances from certain building requirements. For example, standard building practices—including the typical rectangular lot with its established front, side and rear setbacks—do not lend themselves well to passive solar energy design. Since building orientation is important to the successful use of solar energy, flexible lot lines and variations in setbacks should be permitted to allow for optimum solar access.

ACTION: **Implement programs to use energy more efficiently in existing developments.**

Existing developments should not be overlooked when considering energy efficiency measures. In existing buildings, weatherization and solar energy retrofits can help to use energy more efficiently. Even small improvements, such as increased insulation, caulking, and double-paned windows, can significantly reduce energy consumption.

ACTION: **Enhance energy efficiency measures in local government operations.**

The City should take the lead in energy efficiency as an example to El Pasoans. The City transit authority, Sun Metro, already has several alternative fueled (compressed natural gas) vehicles in its fleet. More City vehicles could be converted. Additionally, new construction undertaken by local government, such as government buildings, could incorporate passive solar principles.

Habitat for Humanity

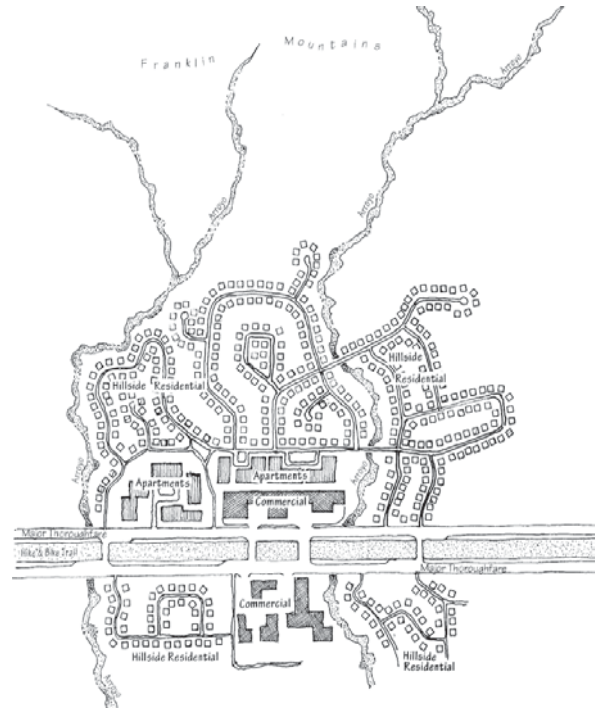
Habitat for Humanity, an organization that builds homes for families with low incomes, makes energy efficiency a priority when building houses. Habitat follows passive solar energy guidelines, such as proper building orientation, south-facing windows, and roof overhangs in all homes. In addition, other energy saving measures are employed, such as additional wall insulation, fluorescent lighting, insulated water pipes, thermal insulated windows, insulated doors, insulated slab, and energy-efficient appliances. Habitat for Humanity homes meet the criteria for the Environmental Protection Agency Energy Star rating, which requires 30% greater energy efficiency than what is mandated by the Model Energy Code. Not only do these homes conserve energy resources, but residents enjoy the resultant reduction in their monthly utility bills.



Above: *Habitat for Humanity home.*

POLICY: **Emphasize infill and higher-density developments located in areas served by public transit to reduce dependency on automobiles.**

The present pattern of urban development with its emphasis on single-family homes, individual lots, and long commutes does not foster efficient energy usage. It also encourages use of the automobile. The trend should be considered toward mixed-use developments which have ready access to mass transit options and that locate employment, shopping and residential uses within walking distance of each other. Promoting infill development is another way that the City can influence present growth patterns and move toward more energy-efficient land usage.



Above: Illustration of a cluster style development that preserves the surrounding desert landscape.

POLICY: **Encourage development practices that do not accelerate the erosion process by preserving existing flora, where practical.**

The erosion process is accelerated by removing surface cover, such as vegetation. Careful grading practices can do much to reduce the risk of erosion. Grading can be defined as modification of the natural terrain with earthmoving or other heavy equipment to make construction easier or less costly. Ensuring adequate personnel to inspect construction sites and enforce the ordinance is vital.

POLICY: **Retain and replenish natural vegetation wherever possible.**

Located in the Chihuahuan Desert scrub biotic community, El Paso is home to a wide variety of desert plants. Carefully maintained, these plants can be used to create attractive desert landscapes. Altering El Paso's natural desert climate with plants that consume large amounts of water is imprudent, given finite water resources. The use of native, naturalized plants and xeriscaping should therefore be considered when landscaping.

ACTION: **Allow cluster development and higher density uses that provide sufficient open space to preserve natural vegetation.**

Many desert plants, especially some species of cacti, are very fragile and slow-growing. Once removed, they take many years to return to their former state if they do, in fact, regrow. As much natural vegetation should be retained as possible through innovative site design practices which incorporate clustering, narrower roads, and higher densities to preserve existing vegetation.

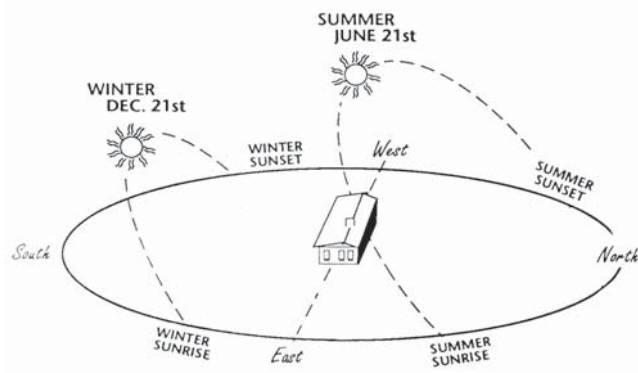
Energy Resources

Every aspect of our lives depends on the use of energy resources; however, current patterns of energy consumption and usage are not sustainable over the next century. The City must make hard choices about how to address this situation. Whether we choose to explore alternative sources of energy, make serious strides in energy conservation, or a combination of both, one thing remains certain: energy use as it exists today cannot continue indefinitely.

GOAL: SECURE SUFFICIENT ENERGY RESOURCES TO MEET PRESENT AND FUTURE COMMUNITY NEEDS.

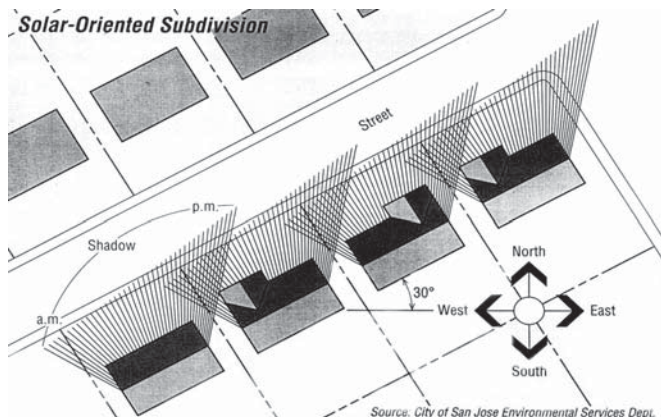
POLICY: Promote the use of alternative energy sources and technological innovations which conserve energy.

Despite El Paso's almost unlimited supply of sunlight, the use of solar energy is very limited. El Paso has the potential to lead the nation in usage of solar energy as well as in other energy sources such as wind and geothermal. These alternative energy sources should be explored.



Above left: Solar Path.

Above right: Subdivision design with solar orientation.

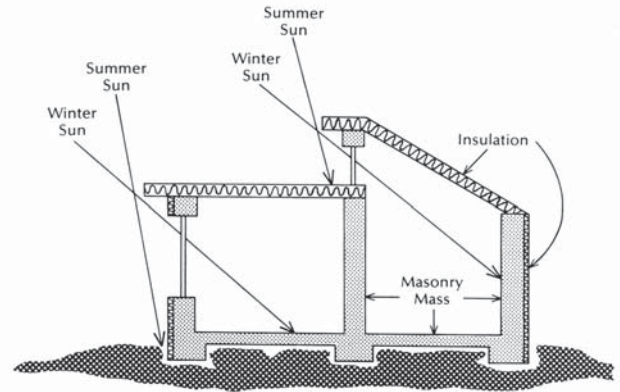


ACTION: Develop standards to encourage the development of buildings that use solar energy systems.

It is not difficult to incorporate passive solar energy measures into new construction. To make maximum use of the sun, buildings should be oriented to take advantage of the sun's position during the year. Heat provided by the sun entering south-facing windows is called direct gain. In the winter, the sun is lower on the horizon and enters these windows and penetrates deeper into interior spaces, providing heat. In the summer, the sun is much higher in the sky and does not penetrate as deeply into a space. It is critically important to provide the proper shading of south facing windows to prevent excessive heat build up. Keeping the sun out of spaces in the summer time keeps them cooler, which reduces the need for energy to cool spaces, which, in turn, reduces pollution. This simple concept of properly designed overhangs has far reaching environmental consequences which could have a positive impact on our environment. Proper building orientation and careful landscaping, i.e., using trees as a shading device, can also significantly reduce energy consumption. Incorporating these standards into City building codes should be implemented to help reduce energy usage across the entire City.

ACTION: Continue efforts to adopt the latest edition of the Model Energy Code.

The Model Energy Code is a national building code which mandates minimum levels of energy efficiency measures, such as amount and type of insulation. It is updated every few years. To ensure that new construction is built to at least the minimum energy code standards, the City should adopt the latest edition of the Model Energy Code whenever it is updated.



Above: Passive solar building orientation and design.

ACTION: Promote public education programs which stress the responsibility of each person to conserve energy resources.

Making the citizens of El Paso aware of limited energy resources is vital. Awareness of energy conservation needs to start with energy awareness programs at the elementary school level.

POLICY: Require the protection of residential solar access from conflicting adjacent uses.

Solar access is defined as direct and unobstructed access to the sun's rays. El Paso's City Code provides protection of solar access for buildings with licensed solar energy systems. This provision is vital if El Paso is to increase its usage of solar energy.

Ecologically Sensitive Areas

El Paso is home to several distinct and valuable ecological and topographical areas which provide habitats for many plants and animals. From the vast, flat sweep of the Hueco Bolson to the rocky outcroppings of the Franklin Mountains, these ecologically sensitive areas should be recognized and protected (see **Map Atlas**).

GOAL: PROTECT AND PROMOTE ECOLOGICALLY SENSITIVE AREAS SUCH AS AQUIFER RECHARGE ZONES, HILLSIDES, BOSQUES, ARROYOS, AND WETLANDS.

Below: Keystone Wetlands.



Measures can be taken to protect El Paso's distinct ecological areas. Already, the majority of the Franklin Mountains are protected by the Franklin Mountains State Park and thus cannot be developed. Much of the land contained in the Piedmont Slopes area falls within the Planned Mountain Development (PMD) District zoning category, which restricts development density based on percentage of slope, controls grading practices, and has strict requirements for provision of open space. Other ecologically sensitive areas such as aquifer storage and recovery zones or arroyos could

be protected by implementing an overlay district which would set standards for the amount and type of development allowed in these areas.

POLICY: **Allow high-density land uses and cluster developments that protect ecologically sensitive areas.**

New developments in areas known to be ecologically important should be subject to stricter regulations that encourage clustering, narrow roadways, and higher densities in order to preserve the maximum amount of open space.

ACTION: **Identify and protect ecologically sensitive areas in the planning of new developments.**

POLICY: **Encourage retention of land in a natural, undisturbed condition.**

ACTION: **Implement the use of conservation easements to preserve ecologically sensitive areas.**

To protect ecologically sensitive areas, the City can implement a conservation easement policy. Land dedicated as a conservation easement is permanently protected from development but its ownership remains in private hands. This option should be explored in more detail to see how it can benefit El Paso's delicate and valuable ecological resources.

ACTION: **Plan new parks and open spaces to preserve ecologically sensitive areas.**

Planning new parks is imperative if ecologically sensitive areas are to be preserved. One concept to explore is the Texas-Chihuahuan Desert Museum and Wildlife Sanctuary. This large facility could showcase native Chihuahuan vegetation and wildlife in both indoor and outdoor exhibits, with additional acreage set aside as a wildlife sanctuary.

Flora and Fauna

El Paso's distinctive natural regions provide habitats for many species of wildlife. In addition to our native wildlife, many rare and endangered bird species seasonally migrate through El Paso. It is important, therefore, to preserve habitats.

GOAL: **CONSERVE, PROTECT AND ENHANCE EL PASO'S PLANT AND WILDLIFE RESOURCES.**

Though El Paso has a reputation as a barren, arid desert community, the area supports a diverse and unique plant and wildlife population.

POLICY: **Encourage the establishment and maintenance of wildlife and nature preserves.**

Existing protected wildlife habitats include: Rio Bosque Park, Feather Lake Wildlife Sanctuary, and the Franklin Mountains State Park. In addition to maintaining existing protected areas, serious consideration should be given to securing additional preserves, such as the Keystone Dam wetlands area on Doniphan Road in west El Paso.

ACTION: Assure preservation of natural habitats for wildlife, especially in riparian corridors, wetlands, and hillside areas, and protect threatened/endangered species of plants and animals.

El Paso is home to many rare and/or endangered species of plants and wildlife. Therefore, habitat preservation should be considered prior to undertaking any new development. In addition to existing protected wildlife habitats, additional habitats include riparian corridors along the Rio Grande, arroyos, irrigation canals, and large areas of irrigated cropland. As with El Paso's vegetation resources, many species of wildlife found are sensitive to habitat changes. Development practices using clustering to preserve undisturbed open space should become a priority.



Above: Feather Lake Wildlife Preserve.

ACTION: Consider the adoption of a tree preservation ordinance.

Feather Lake

Feather Lake Wildlife Sanctuary, located off North Loop Drive in east El Paso, is a unique example of an urban wildlife habitat. In actuality a City stormwater detention ponding facility, Feather Lake was built by the City in 1969. When the detention basin was created, its bottom was below the normal level of the underground water table, creating a shallow pond in which cattails, bulrush and other wetland vegetation began to grow while cottonwoods, saltcedar, and other riparian species started appearing around the shore. Members of the Trans-Pecos Audubon Society soon recognized the site's value as a wildlife habitat, and leased it from the City in 1976. Open to the public on a limited basis since 1981, Feather Lake provides three habitats: freshwater marsh, riparian woodland, and upland desert scrub and grassland. While primarily a sanctuary for migrating birds, Feather Lake also provides a haven for various species of reptiles, amphibians, mammals and fish. This sanctuary is significant in that it accomplishes two things at once: it meets the community's need for flood control while at the same time preserving a natural habitat.

In a desert community such as El Paso, trees are a valuable and rare resource, providing shade, wind protection, and aesthetic beauty. Trees native to El Paso include the Goodding Willow, Velvet Ash, and the Gambel Oak. The creation of a tree preservation ordinance would serve to protect El Paso's limited supply of trees. This ordinance would require the incorporation of existing trees into new development and replanting of trees which must be removed due to site development constraints.

ENVIRONMENTAL IMPACTS

El Paso is subject to various environmental conditions, both naturally occurring (such as geologic conditions or flooding) and man-made (such as hazardous materials or noise). While risks associated with these environmental concerns are to be expected, careful planning can do much to mitigate potential hazards. For example, avoiding placing buildings on fault lines can significantly lessen the risk of earthquake damage, and careful building practices can reduce the amount of erosion and flooding that may occur. When such environmental impacts do occur, there are often large costs associated with them—costs the City must bear such as replacing utility lines damaged by seismic activity.

MOUNTAIN AND HILLSIDE DEVELOPMENT

The mountain and hillside areas of the City are an important visual and natural resource. These areas are generally characterized by steep slopes, rugged topography, soil instability, erosion, rock features, environmental hazards, and other physical factors. For these reasons, *The Plan* encourages development patterns that are appropriate for the area to minimize potentially significant risks to public safety, to minimize exposure of public facilities and private development to potentially significant damage, and to reduce extraordinary public service costs.

GOAL: **ENCOURAGE DEVELOPMENT THAT RETAINS THE NATURAL TERRAIN FEATURES.**

GOAL: **PRESERVE THE VALUABLE NATURAL RESOURCES OF THE MOUNTAIN AND HILLSIDE AREAS AND MINIMIZE THE EXPOSURE OF POTENTIAL ENVIRONMENTAL HAZARDS ASSOCIATED WITH THEIR DEVELOPMENT.**

In an effort to guide development in these environmentally sensitive areas, the City has recently modified its zoning and subdivision regulations to ensure that proper attention is given to drainage and flood control, open space requirements, and public infrastructure necessary to serve the area.

POLICY: **Develop and update regulations to promote safe development practices.**

POLICY: **Promote development regulations that allow for design flexibility to ensure that development maintains the integrity of the area.**

The El Paso Mountain Committee, an advisory group first established by the City Council on August 1, 1974, is tasked with the review of development applications within the mountain and hillside areas. The Committee has been instrumental in the establishment and revision of the City's Mountain Development Area, the Hillside Development Area, and the mountain-zoning ordinance. The area boundaries for each are depicted in the **Map Atlas**.

- ACTION:** Permit development of mountain and hillside lands at densities consistent with minimizing environmental hazards, maximizing resource conservation, and achieving compatibility with existing land use patterns.
- ACTION:** Promote clustering of developments and strict architectural and site design controls on developments to avoid adverse visual or environmental impacts.
- ACTION:** Encourage mountain zoning regulations to govern developments to minimize damage to the natural environment.
- ACTION:** Limit grading or recontouring of the terrain to preserve the natural character of the area and to minimize the removal of significant natural vegetation.
- ACTION:** Promote construction techniques and housing types adaptable to variable terrain.

Mountain Development Area

The Mountain Development Area (MDA) refers to approximately 37,881 acres of land on the Franklin Mountains, which is subject to stringent grading practices and platting procedures. In 1998, the Municipal Code was amended to move the regulations applying to the MDA from the Grading Ordinance to the Subdivision Ordinance to permit a timely and comprehensive review at the initial phase of a development. Standards incorporated address the following: drainage and erosion; vegetation and revegetation; fire protection; grading, cuts and fills; streets; street lighting; lot layout; traffic control signage; and, driveway access. Included within the area of the MDA is the Franklin Mountains State Park (23,744 acres) which is not available for urban development.



Above: Hillside development in the Northeast.

Hillside Development Area

The Hillside Development Area (HAD) includes land adjoining the MDA which is characteristic of major arroyos and hilly terrain. Properties within the HAD are provided incentives for preservation of the natural features by allowing varying lot sizes and flexible yard standards through a special permit process. A revision to these regulations is proposed as part of the Zoning Ordinance Rewrite recommended by *The Plan*.

Planned

Mountain

Development District

The City's first mountain zoning ordinance, the Mountain Development District, was adopted in August 1976. This zoning district underwent extensive revision. In 1984, it was replaced with the Planned Mountain Development District (PMD). A rewrite of the PMD was accomplished in 1998. The primary changes included the consolidation of a density and open space formula based on slope, and the creation of development standards that address height, architectural style and color of buildings, and other aesthetic and visual concerns. Properties within the MDA are primarily zoned PMD.

Geologic Conditions and Soils

El Paso is considered an area of moderate risk for seismic activity. Remnants of past seismic events are seen in the numerous faults in the El Paso area. A fault of particular significance is the East Franklin Fault which runs along the eastern flank of the Franklin Mountains. A fault is a rock fracture along which blocks of rock have moved past one another as a result of stresses on the earth's crust. See Environmental Constraints map in **Map Atlas**.

GOAL: PROTECT THE COMMUNITY FROM RISKS ASSOCIATED WITH NATURAL GEOLOGIC CONDITIONS.

A study of El Paso's geologic conditions was conducted in 1996 which found reason to undertake earthquake risk mitigation measures. For example, buildings of critical importance, such as schools, hospitals, police and fire stations, bridges, and hazardous material sites should not be built near documented fault zones, and other buildings should be set back at least 50 feet from these identified areas. Highways and bridges should be built to withstand seismic activity as well. While it would seem a matter of common sense to disallow buildings on or around a fault, there is presently no regulation in place that prohibits this practice.

POLICY: Encourage protective ordinances to minimize structural damage to buildings from geologic hazards.

ACTION: Implement a special permitting zone in documented active fault zones which will require geotechnical studies as part of the development review process.

While it would add an additional step to the development review process, such a requirement would serve to protect citizens from the risk of seismic activity. It could be implemented through a special zoning overlay district for all documented active fault zones and other areas with geologic hazards. This overlay district would require geotechnical studies prior to issuance of any permits, specify setbacks, and limit the types of structures that could be built in such areas.

ACTION: Develop setback standards for areas adjacent to the East Franklin Fault.

The East Franklin Fault is of particular concern. Recent geologic studies indicate that this fault is capable of producing an earthquake with a magnitude of 6 to 7 on the Richter scale. Setback standards should be developed to avoid building adjacent to this fault. As another option, the Park and Open Space Plan proposes development of a linear park along the East Franklin fault; this would keep buildings away from this known geologic hazard while providing open space as a recreational opportunity for El Pasoans.

POLICY: Discourage development where a severe potential for landsliding or mass movement exists.

El Paso's location at the base of the Franklin Mountains creates serious slope constraints in certain areas. Various types of slope failure, also known as mass movement, include: landslides, rock falls, earth flows, soil slippage, and creep. Mass movement can be activated by man-made activities, such as excavation, construction, alteration of natural drainage patterns, or removal of plant cover. The forces involved in mass movement are very powerful and can result in major property damage, environmental destruction, and even loss of life. Avoiding development in areas where a potential for mass movement exists can help avert such tragedies.

ACTION: Identify and map areas with adverse soil conditions and geologic hazards.

The City has maps of documented fault zones and certain soil conditions. These maps should be continually updated as new information is obtained. Since soil types have a direct influence on the type and feasibility of development and use, it is important to be aware of soil conditions prior to undertaking development.

ACTION: Avoid locating vital public facilities, including utilities, in areas with identified geologic hazards, and develop standards to limit what type of structures can be built in these areas.

Due to the safety concerns associated with building close to known geological hazards, vital public facilities, such as utilities, arterial roads, hospitals, fire and police stations and schools should not be located in these areas. The environmental significance of fault zones should be considered as well. Faults play an important role in the recharging of groundwater by serving as a conduit for rainwater or surface water to underground aquifers. However, if sewage or other pollutants seep through a fault, the groundwater supply can be contaminated. For this reason, wastewater treatment plants and industries that utilize hazardous materials should not be located near fault zones.

Erosion and Sediment Control

Erosion is the process of detachment of soil by the moving force of water, wind or gravity. Its effects are visible all over the City. El Paso is particularly vulnerable to soil erosion because of its areas of steep slopes and disturbance of natural water runoff processes caused by short-duration, high-intensity storms. Erosion and sediment control go hand in hand. Detached soil particles are carried down slopes into drainage channels and waterways, eventually being deposited as sediment.

GOAL: PREVENT DAMAGE TO STRUCTURES OR NATURAL TERRAIN FEATURES FROM THE EROSION PROCESS.

Erosion deposits sediment, which is considered a hazardous material. Sediment is the greatest single pollutant of streams, lakes, ponds, and reservoirs because it carries with it pesticides and other chemical pollutants. Sediment deposits can also contribute to flooding problems. To avoid the dangers of sedimentation, bodies of water should always be protected from excessive erosion.

POLICY: Protect river and stream banks from excessive erosion.

Maintaining watercourse channels in their natural state is one of the most effective ways to prevent undue erosion and sedimentation. Efforts expended to prevent erosion and sedimentation are far less costly than those required to remediate it.



Above: Graded development with sand blown into the adjacent street.

ACTION: Retain river, arroyo, and stream channels in their natural state to prevent undue erosion and sedimentation.

POLICY: Prevent premature grading practices to discourage the unnecessary removal of ground cover.

To mitigate erosion, grading should be as minimal as possible, avoiding drastic cuts and leaving as much natural vegetation as possible. Special care must be taken to avoid premature grading because of the difficulty of revegetation and resultant increased potential for erosion.

ACTION: Require erosion control measures, including re-vegetation, in conjunction with all new development.

The Grading Ordinance requires that erosion control measures must be provided once grading begins. To counteract water erosion, silt fencing, diversion berms, and contouring are employed. To counteract wind erosion, stabilized construction entrances, watering and wind fencing are used. Revegetation of graded areas should also be employed to further reduce the risk of erosion.

Below: Eroded slope in Northwest El Paso.



Flood Control and Drainage

While it seems surprising that El Paso would need to address flood control issues with its average yearly rainfall of 5 to 8 inches per year, there are many local conditions that make flood control of utmost importance. El Paso's annual rainfall is concentrated in the months of July, August, and September primarily as brief, but heavy, thunderstorms. These intense periods of rainfall cause localized flooding and drainage problems. Other natural conditions also impact flooding issues, including the poor permeability of many El Paso soils, especially the clay soils of the valley floodplain. Water drains slowly, contributing to flooding and vector control problems. The bedrock of the Franklin Mountains, combined with steep slopes, contributes heavily to runoff due to the lack of absorption and accelerated water flow.

GOAL: PROTECT THE COMMUNITY FROM THE RISK OF FLOOD DAMAGE.

Because of the low annual rainfall and the expense of underground drainage systems, the City uses street surfaces to carry stormwater and act as part of the storm drainage system. The El Paso Flood Control Map, maintained by the Department of Engineering, shows the master drainage plan for the City. The system consists of a network of drainage channels, culverts, dams, and retention ponds which ultimately discharge storm water runoff into the Rio Grande. The City Engineering Department is entrusted with the responsibility of ensuring adequate drainage and flood protection for the City. The primary means of accomplishing this is through review of proposed developments and subdivision drainage plans to ensure adequate drainage for new developments.



Above: *Flood control in residential subdivisions.*

POLICY: Discourage new development from locating in flood-prone areas.

The National Flood Insurance Program mandates restrictions on development within the 100-year flood hazard zone (where the probability of flooding is determined to be one percent in any given year). The Federal Emergency Management Agency (FEMA)—as the managing agency for this program—determines the boundaries of these flood hazard areas which

are published on the Flood Insurance Rate Maps and depict varying levels of flooding risk. While development within the floodplain may be allowed if measures are taken to divert and control water, this is not necessarily the best course of action. Development should be restricted so only certain types of recreational, agricultural or open space uses are allowed in flood-prone areas (see **Map Atlas**).

ACTION: Restrict development in flood-prone areas so only certain types of recreational, agricultural or open space uses are allowed.

By restricting development in flood-prone areas, the City follows the principle of keeping man away from water, easier and less expensive in the long run than keeping water away from man.

POLICY: Consider the flood impact that new developments may have on existing developments downstream.

New developments, if not carefully planned, can alter drainage patterns and increase impermeable surfaces, thus increasing runoff. This runoff can then adversely impact existing development downstream, compounding the flooding situation.

ACTION: Maintain natural stream corridors and arroyos in as original a state of alignment as possible.

Maintaining natural stream corridors and arroyos in their original state of alignment is one of the most important ways to prevent flooding. Implementation of a stream buffer zone overlay district where no land disturbance is allowed adjacent to, or near a stream, river or arroyo would be a way to achieve this.

POLICY: Preserve designated floodway areas for non-urban uses.

ACTION: Design necessary flood control facilities to blend with and enhance developments through concepts such as park/ponding and retention of natural arroyos.

Flood control measures can be taken in a manner that enhances the City. By designing necessary flood control facilities to blend with and enhance development, such as park/ponding, use of natural arroyos, and developing parks around major flood control dams, El Paso can benefit from increased open space and recreational areas.

ACTION: Continue to work with the U.S. Army Corps of Engineers to maintain and ensure adequate flood protection facilities.

In partnership with the City, the United States Army Corps of Engineers has constructed several dams and major drainage control structures to alleviate much of the City's flooding problems. These efforts should continue in order to reduce existing flooding situations.

Drought Management

GOAL: INTEGRATE DROUGHT CONTINGENCY PLANNING INTO ALL ASPECTS OF CITY GOVERNMENT, BUSINESS AND RESIDENTIAL SECTORS.

The El Paso Water Utilities-Public Service Board (EPWU-PSB) must fully develop a drought contingency system. This must be done both for practical reasons and for compliance with Texas State Law. Once these systems are fully developed, all the social and governmental segments of the City will need to understand what will be required when drought conditions occur.

POLICY: Adopt a drought contingency plan, developed and adopted by EPWU-PSB and City Council, that can be used to manage water shortages.

POLICY: Develop and implement communications integration so all City departments and citizens understand potential drought severity.

ACTION: Ensure that the Texas Senate Bill One regional planning process includes practical considerations for implementation that are feasible for the City as a whole.

Texas Senate Bill One requires comprehensive regional water planning be accomplished throughout the State. Part of this planning process requires drought contingency planning. Any planning done by the Council of Regional Governments must be implementable by the City. PSB must coordinate with other City departments to ensure all planning is feasible, understood and implementable.

ACTION: Communicate, through a public outreach and educational program, drought contingency and drought implication, so the community is prepared to implement water saving measures as required during drought periods.

Solid Waste Management

The City of El Paso generates a tremendous amount of garbage—over 1,000 tons per day in 1998. To handle this solid waste, the City has access to three landfills:

Landfill	Waste Types Accepted	Origin of Waste	Ownership
McCombs	Residential	Central, Northeast	City
Clint	Residential, Non-hazardous Industrial	Lower Valley, East	City
Camino Real	Residential	Northwest	Private

GOAL: **ASSURE ADEQUATE SOLID WASTE DISPOSAL CAPACITY TO SERVE EL PASO’S PRESENT AND FUTURE NEEDS.**

The Camino Real Landfill, located in Sunland Park, New Mexico, is a privately owned landfill. The McCombs Landfill, owned and operated by the City and located in the far northeast part of El Paso, is also primarily used for residential waste. The Clint Landfill, also owned and operated by the City, is located in southeast El Paso. This landfill accepts residential as well as non-hazardous industrial waste.

Where El Paso’s solid waste ends up depends on the part of the City in which it was collected. Most solid waste material collected by City sanitation trucks in Central El Paso is taken to a transfer station on Delta Street, where it is loaded into large transport trailers and taken to the McCombs Landfill. Trash collected in Northeast El Paso is taken directly to McCombs, while trash collected on the West side goes to the Camino Real Landfill. The Clint Landfill receives solid waste primarily from the East Side and Lower Valley.

POLICY: **Locate and operate solid waste sites in a manner which protects environmental resources.**

The City’s landfills are permitted by the Texas Natural Resource Conservation Commission (TNRCC). Each landfill is required to follow a site operating plan outlining landfill operations, soil cover requirements, record-keeping requirements, vector control, fire containment, contaminated water runoff management, emergency services, leachate monitoring, methane gas management, and site security. These measures are intended to ensure that the City’s landfills are operated in a manner that protects environmental resources.

ACTION: **Expand the capacity of existing landfills prior to developing any new landfill sites.**

The City is not presently seeking new landfill sites; rather, plans are to expand existing sites. El Paso is projected to have adequate landfill capacity for approximately 30 to 35 years. The Clint Landfill is near capacity but the City is in the process of obtaining a permit from TNRCC for a 310-acre expansion. This additional acreage will add at least 35 years to the life of the landfill. The McCombs Landfill is projected to be operational for another 28 years.

POLICY: **Locate and maintain solid waste sites to mitigate negative impacts on surrounding land uses.**



Above: Landfill activity.

The City Code Section 20.45.041 allows landfills only by special permit in the Q (Quarry) District. The special permit process requires a public hearing and approval by City Council. When considering a special permit request for a landfill, the possible negative impacts it may have on surrounding land uses should be of prime consideration.

POLICY: Encourage solid waste reduction techniques such as recycling, reuse, and reduction practices.

Despite the City's adequate landfill capacity, efforts should still be made to reduce the amount of solid waste generated. Waste reduction strategies include recycling, composting and source reduction. Private companies which operate at landfills to salvage scrap metals also aid significantly in reducing the amount of waste needed to be put into the landfill. The City should continuously explore new technologies to reduce solid waste.

ACTION: Implement curbside pickup of recyclables.

Recycling is one of the most effective ways of reducing solid waste. The City presently operates 11 recycling drop-off sites. However, curbside pickup of recyclables should be implemented to encourage more citizens to participate.

ACTION: Support public education programs such as "Keep El Paso Beautiful" which promote solid waste reduction strategies.

Hazardous Materials

Hazardous materials are substances, which, if released or misused, can pose a threat to human health or the environment. These substances are used in industry, agriculture, medicine, research, and consumer goods. Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials and are generally not a problem unless accidentally released, or stored or disposed of improperly. They are most often released as a result of transportation accidents or from chemical accidents in a plant.

GOAL: PROTECT THE PUBLIC AND THE ENVIRONMENT FROM THE RISKS INHERENT IN THE USE, STORAGE AND HANDLING OF HAZARDOUS MATERIALS.

POLICY: Promote international and interstate environmental protection policies through continued cooperation and joint programs with other states and Mexico.

El Paso's border location makes it vulnerable to hazardous material incidents that occur in neighboring Juarez and New Mexico. In recognition of this fact, a Border City Contingency Plan is presently

being drafted. This plan would consist of a mutual aid agreement between El Paso and Juarez for responding to emergency situations, including hazardous material incidents. The plan will contain a reciprocal agreement in which emergency response teams from one jurisdiction would respond to hazardous material incidents in another. Going forward with this plan is vital to ensure the safety of El Paso's citizens.

ACTION: Maintain a strategic plan for the evacuation of citizens in the event of an accident involving hazardous materials.

The City has an emergency response plan in place to respond to hazardous material incidents, the El Paso City/County Emergency Operations Plan. Generally, the State responds to major incidents involving hazardous materials while minor incidents are handled locally. However, local authorities are the first response for all incidents, including the most severe. It is therefore vital that the City's strategic plan be maintained and that emergency personnel are continually trained in how to respond to such incidents.

ACTION: Continue to enforce hazardous cargo routes to minimize travel near residential areas.

Many vehicles containing hazardous materials travel through El Paso every day. To protect El Paso's citizens, hazardous cargo routes for these vehicles have been designated. These routes are intended to minimize travel near residential areas. To ensure public safety, strict enforcement of these hazardous cargo routes must be maintained.

ACTION: Require that all facilities managing hazardous materials and waste be posted with warning signs in English and Spanish as to the danger of the materials within.

The El Paso City Code requires that stored hazardous materials be posted with signage for the specific material contained within in English as the primary language. However, due to El Paso's large Spanish-speaking population, all such signage should be posted in both English and Spanish to lessen the risk of accidents.

POLICY: Protect surface water, groundwater, sanitary sewer systems, and storm water management systems from contamination by hazardous materials.

ACTION: Require that all proposals for new and expanded hazardous waste management facilities provide adequate mitigation for identified environmental impacts.

ACTION: Require proper storage and disposal of hazardous materials to prevent leakage, explosions, fires, or the escape of harmful gases.

Noise and Vibration

Noise, as a hazard to public safety and well-being, is a man-made component of the environment. Noise can come from many sources, including vehicular traffic, trains, aircraft, manufacturing, and construction activities. The existing background or "ambient" noise level in the community is the product of the cumulative effects of a variety of noise sources.

GOAL: PROTECT CITY RESIDENT FROM THE ADVERSE IMPACTS OF EXCESSIVE NOISE OR VIBRATION.

The intensity of a sound is measured in decibels (dB). The Environmental Protection Agency identifies 45 dB indoors and 55 dB outdoors as the desirable maximum levels of noise. Prolonged exposure to noise levels of 85 dB or greater can cause hearing loss, while noises above 140 dB can cause acute pain and immediate hearing loss.

Below: Train traffic near residential neighborhoods.



Vibration is distinguished from noise in that it may or may not be heard but it can be felt. Vibration, which is described as a quivering or shaking of the ground or a structure, can be caused by vehicles, trains, earth-moving equipment and blasting activities.

POLICY: Discourage residential development in areas with high noise generators, such as airports, railroad tracks, or major

thoroughfare noise hazard zones, without noise mitigation measures.

El Paso has a noise ordinance in place (City Code Chapter 9.40) intended to protect citizens from the harmful effects of noise. While this ordinance is effective, it should be amended to both reduce the number of exemptions allowed and to permit stricter penalties for noncompliance. Since continuous exposure to noise can be detrimental to one's health, it is important to enforce the provisions of this ordinance. However, it is also important to avoid locating residential development in areas with high noise generators such as airports, railroad tracks, or major thoroughfares, without noise mitigation measures.

ACTION: Include appropriate noise attenuation devices in the design of all new and existing freeways, expressways, and railroads.

POLICY: Control noise levels through the use of buffers between incompatible land uses.

POLICY: Discourage land uses that create damaging or annoying earthborne vibrations.

El Paso's City Code sets standards to limit the harmful effects of vibration. Section 9.40.090 prohibits any perceptible ground vibration which may be felt beyond the property line where the activity is occurring. Vibration caused by construction or grading is allowed, but is restricted to certain hours and days of the week. Blasting activities, which can cause significant vibration, are regulated by the Fire Department and are addressed in Chapter 9.68 of the City Code.

ACTION: **Require consultation with utility companies prior to activities which can cause excessive vibration.**

Excessive vibration can cause damage to buried utility lines and to existing structures. Therefore, it is imperative to contact utility companies prior to conducting any vibration-causing activities.

Lighting and Glare

GOAL: **IMPROVE PUBLIC SAFETY BY DEVELOPING APPROPRIATE LIGHTING AND CONTROL STANDARDS.**

Proper lighting of the community is essential for health and safety reasons, but lighting needs to be controlled so that it is not inadequate, too intense, or intrusive to adjacent land uses.

POLICY: **Provide adequate street lighting to protect the public and deter crime.**

ACTION: **Consider the adoption of a lighting ordinance to set safety and aesthetic standards for lighting in the City.**

Below: *Solar glare.*



New lighting technologies have produced lights that are extremely powerful. Improperly installed, these lights may create excessive glare, light trespass, and high energy use. To address these problems, some cities have adopted outdoor lighting ordinances. An ordinance of this type regulates the types of lights that may be used, their installation, and restricts areas that can be illuminated. El Paso could benefit from such an ordinance in terms of safety, lower energy costs, and reduction in light pollution.

POLICY: **Discourage commercial uses that have intrusive levels of lighting from locating adjacent to residential land uses.**

A brightly lit commercial use can severely impact neighboring residential areas. This situation is known as light trespass, and is defined as the shining of a light beyond the boundaries of the property on which it is located.

ACTION: **Prohibit the use of glass adjacent to major thoroughfares if it is determined that a potential glare hazard exists.**

Glare is light that is intense enough to reduce one's ability to see. In extreme cases, glare can cause temporary blindness. Glare is especially hazardous in traffic situations; for example, sunlight reflecting off a mirrored glass building may blind passing motorists, causing automobile accidents. Care must be taken to avoid this situation.